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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	0.001	0.000	0.000	0.000	0.000	-	-	-	-	-	-
657106: <i>EVOLVED SBIRS</i>	0.000	0.001	0.000	0.000	0.000	0.000	-	-	-	-	-	-

Program MDAP/MAIS Code: 210

Note

Project 657106: The \$1K entry in FY 2020 is a database error. This project was canceled in FY 2019.

A. Mission Description and Budget Item Justification

The SBIRS RDT&E FY 2020 budget justification exhibits describe two elements of the SBIRS program: 1) The SBIRS Engineering and Manufacturing Development (EMD) program of record PNO 210 MDAP and 2) the Space Modernization Initiative (SMI) (non-MDAP).

1. SBIRS EMD: The Space-Based Infrared System (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance over legacy systems in order to meet requirements in Air Force Space Command's (AFSPC) Operational Requirements Document (ORD). The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. Four HEO payloads and four GEO satellites are on-orbit. Three of the four GEO and two of the four HEO satellites have completed AFSPC and USSTRATCOM operational acceptance and are certified for Integrated Tactical Warning/ Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. HEO-3 and HEO-4 are in a storage/residual operational mode. GEO-4 (Flight 3) is proceeding through on-orbit checkout and infrared sensor tuning following its respective launch in Jan 2017. The program of record (PoR) ground segment development exploits both the new scanner and starrer sensor data through software processing and builds user messages for missile warning and missile defense. Also, data exploitation efforts enable access to raw and processed data to expand capabilities for battlespace awareness and other applications. The baseline requirement document is the 1996 SBIRS ORD. Enterprise Systems Engineering and Integration (SE&I) provides intra- and inter-program requirements development, enterprise master planning, validation and verification, specialty engineering, and architecture development.

2. SMI: The primary objective of SMI is to enable and inform future decisions to maintain and evolve a capable, resilient, and affordable OPIR architecture by maturing technologies and mitigating risk areas to facilitate OPIR modernization within the Department's constrained resources. SMI supports the PoR by assessing future parts and material obsolescence and designing future space and ground modifications focused on affordability and capability while simultaneously maximizing the effectiveness of existing system data products. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements and through technology insertion. SMI will also mature potential technology upgrades at the component and system level for future space and ground architecture affordability and capability enhancements. The SBIRS OPIR SMI plan includes studies and risk reduction activities to evolve the current PoR

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<p>SBIRS constellation, reduce production timelines, and reduce recurring production costs. Based on the outcome of these studies and technology development, the Sensor Ground Demonstration will develop capability for current, next generation sensors, processors, and algorithms. SMI funded data exploitation efforts include OPIR mission data processing (MDP), data fusion, data dissemination, algorithm development, network connectivity, efficient interfaces and sensor performance assessments to enable greater exploitation of SBIRS PoR and other data sources. SMI exploitation efforts build upon PoR capabilities and inform the PoR decision process. The data exploitation efforts identify affordable, responsive and resilient measures to improve technical intelligence and battlespace awareness processing and data dissemination tools to enhance OPIR support to the warfighters and other data users. The SMI Hosted Payloads and Wide Field of View (WFOV) Testbed activities explore technology maturation, qualification of new components, and subsystem/component prototyping to evolve the OPIR architecture. Hosted Payloads and WFOV Testbeds support maturation of MDP algorithms for tactical and strategic applications which are critical demonstration efforts to enhance PoR capabilities and to reduce program risks for future OPIR systems, whether new systems or evolutions of the PoR. Collection of on-orbit WFOV data is critical to develop algorithms to process large data sets generated by emerging large format focal planes and to reduce risk for possible SBIRS follow-on architectures. SBIRS Enterprise Ground Services (EGS) infrastructure modernization efforts under SMI will introduce Telemetry, Tracking and Command systems (TT&C) and Ground Control automation, Future Operationally Resilient Ground Evolution (FORGE) MDP as well as competition into SBIRS Ground with an emphasis to on-ramp to EGS as soon as practical. SMI activities are balanced and phased to enable an expanded tradespace and improve the competitive environment.</p> <p>Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver SBIRS High EMD and SMI Enterprise weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.</p> <p>This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.</p>		

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.001	0.000	0.000	0.000	0.000
Current President's Budget	0.001	0.000	0.000	0.000	0.000
Total Adjustments	0.000	0.000	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

Change Summary Explanation

FY 2020: Database error

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>				Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
657106: <i>EVOLVED SBIRS</i>	0.000	0.001	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SBIRS primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance over legacy systems in order to meet requirements in Air Force Space Command's (AFSPC) Operational Requirements Document (ORD). The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. Four HEO payloads and four GEO satellites are on-orbit and fully mission capable, having completed AFSPC and USSTRATCOM operational acceptance and are certified for Integrated Tactical Warning/ Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. HEO-1 and HEO-2 are in a storage/residual operational mode. The program of record (PoR) ground segment development exploits both the new scanner and starrer sensor data through software processing and builds user messages for missile warning and missile defense. Also, data exploitation efforts enable access to raw and processed data to expand capabilities for battlespace awareness and other applications. The baseline requirement document is the 1996 SBIRS ORD. Enterprise Systems Engineering and Integration (SE&I) provides intra- and inter-program requirements development, enterprise master planning, validation and verification, specialty engineering, and architecture development.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver SBIRS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

This project was canceled in the FY 2019 PB.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2020	FY 2021	FY 2022
Title: SBIRS EMD-	0.001	-	-
Description: Continued EMD contracts for Space and Ground segment development, concept studies/activities for obsolescence issues.			
Accomplishments/Planned Programs Subtotals	0.001	-	-

C. Other Program Funding Summary (\$ in Millions)

N/A

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C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: May 2021
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

N/A																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 1206441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
N/A	1	2020	1	2020